CWMP EXECUTIVE SUMMARY

This Comprehensive Wastewater Management Plan (CWMP) provides a detailed analysis and evaluation of the current condition of the Marion wastewater system, a projection of future regulatory requirements and system needs, and an analysis of potential options to meet those future conditions over the next 20 years. It focuses on Marion's Water Pollution Control Facility (WPCF), the collection system, and areas currently served by septic systems. The CWMP includes detailed discussion of the following:

- Existing Conditions Assessment
- Future Conditions Assessment
- Identification of Wastewater Needs
- Alternatives Identification, Screening and Analysis
- Recommended Plan
- Implementation & Financing
- Summary of Public Participation

Water Pollution Control Facility (WPCF)

The origins of the WPCF date to 1969 and include a significant upgrade in 2005 and more improvements in 2021. The WPCF operates under a National Pollutant Discharge Elimination System (NPDES) permit with a rolling annual average flow limit of 588,000 gallons per day (gpd). Historically there have been instances of exceeding the permitted discharge but in the last five years the average discharge has been 515,000 gpd. The WPCF is constructed with two Sequencing Batch Reactors (SBR) that can treat a maximum throughput capacity of just over 1,000,000 gpd. After filtering and disinfecting, the WPCF discharges effluent to a fresh water stream that empties into Aucoot Cove.

The WPCF is unique in that it includes 3 lagoons (total 20 acres) that act as storage during times of excess inflow and mechanical failure or maintenance. Lagoons #1 & #2 have been the recipient of the process sludge since the opening of the WPCF. As a result of a Buzzards Bay Coalition lawsuit and MassDEP and EPA consent orders, Lagoon #1 has been recently drained, the sludge removed, and the lagoon lined. The redesigned Lagoon #1 is now the sole recipient of process sludge, and it has a forebay for the purpose of collecting sludge and facilitating its removal in the future.

Administrative Consent Orders currently modify the restrictions on the WPCF's Phosphorus and Copper discharge limits, but the Town must plan to meet these limits. Phosphorus is the most significant, and options to address the limit include extending the outfall or chemically treating at the WPCF. Chemical treatment requires less capital investment but results in operating cost for chemicals and increased sludge production. This will also lead to increased handling and disposal costs for future periodic removal of the sludge from the lagoon.

Based on analysis and evaluation within the CWMP, a favored alternative is to further upgrade the WPCF with a third SBR to provide more operational flexibility and redundancy, improve reliability of the WPCF to treat maximum daily flows, and to ensure that the WPCF continues to

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produce an effluent of less than 4 mg/l of Nitrogen. This alternative is contingent upon Marion's request to allow an increased NPDES discharge capacity of 686,000 gpd, which is necessary to allow for projected future WPCF flow increases from proposed sewer extensions and anticipated development.

Collection System

The existing public collection system consists of approximately 18 miles of gravity sewer, eight pump stations, 4.5 miles of force main, and 8.5 miles of low pressure sewers with approximately 500 individual on-lot grinder pumps. There are a small number of private sewer systems that connect to the Town system. There are approximately 1750 users supporting the sewer enterprise fund and approximately 1200 residences on septic.

The inground piping of the collection system varies from old clay pipes to modern plastic pipe. The older pipelines are vulnerable to many forms of damage, with the result that the Town has a severe Inflow and Infiltration (I&I) problem that contributes significantly to the discharge of the WPCF. An ongoing I&I removal program has made significant progress in reducing I&I, but much work remains to be done. The lining of sewer mains is often the most cost-effective solution, when appropriate, but, as the program continues, more expensive repairs will be needed as the most cost-effective repairs are completed.

The eight pump stations (and their force mains) are aging. In addition to age, many of the stations are poorly designed, require extensive maintenance (that they may not have been designed to accommodate well), and many present unique safety hazards. Worst of all, most stations are located in flood zones, with several in velocity zones. The two largest stations (Front Street and Creek Road) have been identified as vulnerable and are single points of failure in the collection system. A new Creek Road pump station has been designed and funding is being pursued. The needs of the Front Street pump station have been identified and fixes are being designed and planned for.

The on-site grinder pumps serving individual homes represent a significant operational and maintenance burden. A decision at the time of installation resulted in the Town being responsible for their maintenance and replacement. This stresses the limited manpower and significantly impacts the operational and maintenance budget. What to do is a challenge for the future.

Sewer Needs Areas

As part of the CWMP, portions of Town not currently connected to the sewer system were analyzed to determine the best options to manage their future wastewater flow. Based on geography, eleven unsewered areas were identified and analyzed as potential Sewer Needs Areas. A detailed review and analysis of the existing houses, potentially buildable lots, soil types, topography, distance to existing sewer, and estimate of potential flow from each location was performed. Additionally, input from a Citizens Advisory Committee (CAC) was considered for each area. Finally, an estimated cost to expand the sewer system to reach each area was calculated, with the determination that grouping some of the neighboring areas together could result in significant savings.

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The different methods of wastewater treatment for each area were then compared, with options including no action, enhanced on-site (nitrogen removing) septic treatment, localized treatment, and sewer extension. Based on all this data and information, it was recommended that six of the Needs Areas be considered for sewer extension and that the remaining five would be candidates for advanced on-site treatment units. Figure ES-1 depicts the location and recommended approach for each of the eleven Sewer Needs Areas.

Recommended Plan

In summary, the CWMP recommends extending sewers to unsewered areas in Marion where existing septic systems are contributing significant nitrogen loads to coastal waters. The plan requires continued actions to address the condition and resilience of the collection system and pump stations. The WPCF will similarly require modifications to address condition and reliability, as well as improvements to meet discharge permit conditions. The plan includes a need to increase the permitted average daily discharge capacity of the WPCF to 686,000 gpd in order to treat flows from the sewer extension areas. The anticipated capital costs for the various elements of the recommended plan are summarized in Table ES-1. The plan will ultimately result in reduced pollutant loads to Marion's coastal waters, which will benefit Marion and surrounding communities.

Table ES-1: Anticipated Capital Costs for Recommendations

Wastewater Management System	Capital Cost
Existing Collection System	$4.5 M
Existing Pump Stations	$12.6 M
Sewer Extensions to Unsewered Areas	$24 M
WPCF & Treatment System	$13 M
Total CWMP Capital Recommendations	**~$54 M**

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Leonards Pond
Horseshoe Pond
Wankinco River
Gibbs Avenue
Main
Mary's Pond Road
Marys Pond
Blackmore Reservoir
Marion Road
WAREHAM
Broad Marsh River
ROCHESTER
County Road
River Road / Wareham Road
Sippican River
Cedar Island Creek
Beaverdam Creek
Sippican River
105
Wareham River
Upper Front Street / Route 105
Weweantic River
Delano Road / Weweantic River
Hammett Cove
Allens Point / Harbor East
"Inner" Sippican Harbor
Wings Cove & Piney Point
Lower Mill Street
195
6
Planting Island
Sippican Harbor
Lower Sippican Neck
Aucoot Creek
Aucoot Creek
Converse Point
Aucoot Cove

Legend

- Gravity Main
- Force Main
- Low Pressure
- Other Parcel
- Enhanced On-Site Treatment Systems Recommendations
- Sewer Extension Recommendations

Integrated List Categories

- Category 2 - Attaining some uses; other uses not assessed
- Category 4A - TMDL is completed
- Category 5 - Waters requiring a TMDL

2,500 0 2,500

Scale In Feet

FIGURE ES-1

TOWN OF MARION, MASSACHUSETTS
CWMP

NEEDS AREAS RECOMMENDATIONS

NOVEMBER 2022 SCALE: NOTED

Weston & Sampson

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